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EXAMINER
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FERNANDEZ RIVAS, OMAR F

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2129

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

Application No.

10/801,099

Applicant(s)

GRABOI ET AL.

Examiner

Omar F. Fernández Rivas

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. Claims 1-28 are pending on this application.

#### ***Information Disclosure Statement***

2. The information disclosure statement has not been filed for this application. To comply with 37 CFR 1.98(a)(1), the following is required: (1) a list of all patents, publications, applications, or other information submitted for consideration by the Office; (2) U.S. patents and U.S. patent application publications listed in a section separately from citations of other documents; (3) the application number of the application in which the information disclosure statement is being submitted on each page of the list; (4) a column that provides a blank space next to each document to be considered, for the examiner's initials; and (5) a heading that clearly indicates that the list is an information disclosure statement.

#### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 4, 10, 11, 12 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the description requirement. The claim(s) contains subject matter which was not described in the specification in such a

Art Unit: 2129

way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

**Claim 4**

The claim recites "top-down signal flow" in line 1. There is no description in the specification or in the claim as to what this top-down signal flow means and how it functions in the method. Moreover, there is no description as to what is considered as being "the top". Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

**Claim 10**

The claim recites "connected in bottom-up fashion" in line 2. There is no description in the specification as to what bottom-up means or exactly what is considered as being "the bottom". Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

**Claim 11**

The claim recites "bottom-up signal processing" in line 1. There is no description in the specification or in the claim as to what this bottom-up signal processing means and how it functions in the method. Moreover, there is no description as to what is considered as being "the bottom". Therefore, one of ordinary skill in the arts would not know how to make and use the invention

Art Unit: 2129

without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

**Claim 12**

The claim recites "top-down signal processing" in line 1. There is no description in the specification or in the claim as to what this top-down signal processing means and how it functions in the method. Moreover, there is no description as to what is considered as being "the top". Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

Claim 12 also recites "top-down signals" in line 4. There is no description in the specification or in the claim as to what this top-down signal means and how it functions in the method. Moreover, there is no description as to what is considered as being "the top". Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

**Claim 15**

The claim recites "bottom-up processing" in line 5. There is no description in the specification or in the claim as to what this bottom-up processing means and how it functions in the method. Moreover, there is no description as to what is considered as being "the bottom". Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue

Art Unit: 2129

experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

The claim also recites "computed top-down". There is no description in the specification as to what this top-down computation means and how it is performed by the method. Therefore, one of ordinary skill in the arts would not know how to make and use the invention without undue experimentation since the intent of this limitation in the claim cannot be established from the claim or from the specification.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 6, 7, 10, 12-15, 17, 19 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

**Claim 1**

The claim recites the limitation "'the presented object or **event**" in line 12. There is insufficient antecedent basis for this limitation in the claim. Note that the claim recites "candidate events" in previous lines but there is no recitation of an **event**.

**Claim 6**

Regarding claim 6, the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Moreover, in line 12, the claim recites "e.g.", which renders the claim indefinite because it is unclear whether the limitation(s) following the "e.g." is part of the claimed invention. See MPEP § 2173.05(d).

#### **Claim 7**

The claim recites "other type of higher level contextual constraint" in lines 2-3, 4, 6 and 7-8. The intent of this limitation cannot be established from the claim since it is not clear what these other type of higher level contextual constraint encompass, therefore rendering the claim indefinite

Moreover, the claim contains subject matter inside parenthesis in lines 3-4. It is not clear if this subject matter is intended to be limitations in the claim.

#### **Claim 10**

The claim recites the limitation "the item" in line 4. There is insufficient antecedent basis for this limitation in the claim.

#### **Claim 12**

The claim recites the limitation "**the current subset** of (non-excluded) candidate objects or events" in lines 2-3. There is insufficient antecedent basis for this limitation in the claim.

Moreover, the claim contains subject matter inside parenthesis in lines 3 and 4. It is not clear if this subject matter is intended to be limitations in the claim.

The claim also recites the phrase "for example", which renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Art Unit: 2129

**Claim 13**

The claim recites "low non-zero measure" on lines 3 and 5 and "high measure" in line 4. The terms "low" and "high" are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

**Claim 14**

The claim recites the limitation "the set of processes" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Moreover, the claim contains subject matter inside parenthesis in lines 5-7. It is not clear if this subject matter is intended to be limitations in the claim.

The claim also recites the phrase "for example", which renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

**Claim 15**

The claim contains subject matter inside parenthesis in line 2. It is not clear if this subject matter is intended to be limitations in the claim.

The claim also contains an ending period in line 6 followed by additional subject matter. The claim(s) must be in one sentence form only. It is not clear if the intent of this additional subject matter is to further describe the subject matter recited before the ending period or if this is a different limitation.



Art Unit: 2129

Line 9 recites "a close match". The term "close" is a relative term which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

The claim also recites the phrase "for example", which renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

**Claim 17**

The claim recites the limitation "said **selective** detecting" in line 1. There is insufficient antecedent basis for this limitation in the claim.

**Claim 19**

The claim recites the limitation "the **selective** detecting" in line 1. There is insufficient antecedent basis for this limitation in the claim.

The claim recites "high measure" in line 3 and "low non-zero measure" on line 4. The terms "low" and "high" are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

**Claim 25**

The claim recites "high measure" and "low non-zero measure" on lines 2-3. The terms "low" and "high" are relative terms which render the claim indefinite. These terms are not defined by the claim, the specification does not

Art Unit: 2129

provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably appraised of the scope of the invention.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35

U.S.C. 102 that form the basis for the rejections under this section made in this

Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6, 8-10, 13-14, 16-19 and 21-28 are rejected under 35

U.S.C. 102(b) as being anticipated by Aref (US Patent #5,528,701, referred to as

**Aref**).

**Claim 1**

Aref anticipates a device for recognition of a presented object (**Aref**: abstract; Examiner's Note (EN): the input data is a presented object. Matching the input data to a objects in the tree is recognition), such device comprising a hierarchical memory (HM) in which is stored a data set representative of candidate objects or events (**Aref**: abstract; C2, L18-41; EN: the tree database is a hierarchical memory and the plurality of objects stored are candidate objects), each candidate object or event having one or more features and said data set being arranged as a hierarchical data set having higher level nodes comprising candidate objects or events and lower level nodes corresponding to features of the candidate objects or events, wherein higher level nodes are associated with

Art Unit: 2129

corresponding lower level nodes and lower level nodes are associated with corresponding higher level nodes (**Aref:** abstract; C1, L61 to C2, L5; C2, L18-41; C3, L28-47; C4, L61 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; EN: paragraph 11 applies. The HMM's will contain the features. Having a higher level tree hold the individual phrases (candidate objects) and a tree holding the individual word in the form of their component phonemes (features). Moreover, the HMM's in each node are considered lower level nodes (the states) associated with a higher level node (the node itself)); a front end module (FEM) responsive to a feature of the presented object or event to produce feature detection information (**Aref:** C4, L43-67; Fig. 1; EN: the display device and the transducer will serve as the front end module. The movement of the pen are used to form feature vectors); a selective attention module (SAM), said SAM modulating flow of said feature detection information so as to determine a reduced set of candidate objects or events as potentially corresponding to the presented object or event, said SAM further receiving information from the higher level nodes for effecting said modulating whereby the device selectively attends feature detection information to progressively exclude candidate objects and identify the presented object or event with enhanced efficiency (**Aref:** C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. The HMM's are considered a SAM since it will use the feature information (modulate the flow of the features) to select the best match between the input sequence and an object in the database, therefore excluding

Art Unit: 2129

other objects from the search path).

## **Claim 2**

Aref anticipates the device responds to successive feature detection information from the FEM to iteratively reduce remaining candidate objects or events and determine a recognition output indicative that: a) a remaining candidate object or event corresponds to the presented object or event; b) no candidate object or event matches the presented object or event; c) a candidate object constitutes a best match to the presented object or event; or d) a set of candidate objects or events constitutes a best match to the presented object or event (**Aref**: C3, L66 to C4, L12; C4, L43-67; C5, L53-64; C8, L16-27; EN: Paragraph 11 applies. The pen movements will provide the successive feature information (feature vectors). Trimming the input sequence is reduce the remaining candidate objects. The object is recognized based on the best match between the input sequence (an event) and the object).

## **Claim 3**

Aref anticipates the SAM controls gating nodes of the hierarchical data such that one or more detected features excite corresponding nodes at a higher level to maintain active candidate nodes of the hierarchical data set, and the device excludes non-excited nodes from the set of candidate objects to identify the presented object or event (**Aref**: C2, L18-41; C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. The HMM's contained in the nodes will accept a specific object with a high probability relative to other objects. Therefore, depending on the input sequence, a node

Art Unit: 2129

will recognize an object (will be exited) or will be excluded depending on how close the object matches the input sequence).

#### **Claim 4**

Aref anticipates the hierarchical data set supports top-down signal flow to derive a measure of feature probabilities (Aref: C5, L24-64; EN: paragraph 11 applies. Since no description is made in the claim or in the specification as to what top-down signal processing means, the Examiner considers starting at the root node and descending the tree a top-down signal processing).

#### **Claim 5**

Aref anticipates a measure is defined on nodes of the hierarchical data set, and the device applies the measure to direct the FEM or modulate feature detection information (Aref: C2, L18-41; C5, L24-64; C7, L30-63; C9, L8-62).

#### **Claim 6**

Aref anticipates the device identifies the presented object or event by a candidate object or event represented by a higher level node of the hierarchical data set, wherein each node at the candidate object or event level represents a different candidate object or event (Aref: C6 to C7, L15; EN: paragraph 11 applies. Each letter is a different candidate object); such nodes may be at least partially active or inactive (Aref: C5, L23-64; EN: paragraph 11 applies.

Depending on the probability, the node will be "partially" active. Moreover, the recitation that an element "may" perform a given function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense); wherein an inactive node may indicate, for

Art Unit: 2129

example, that the corresponding object or event is no longer a candidate object or event (**Aref:** C5, L23-64; EN: paragraph 11 applies. Following the path with the best match between the input sequence and an object will indicate if the object is a candidate to recognize the object. Moreover, the recitation that an element "may" perform a given function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense); wherein when the recognition process begins, there is a set of candidate objects or events, as indicated by the activity of the corresponding nodes (**Aref:** C5, L23-64; C7, L30-63; EN: paragraph 11 applies. The probabilities will indicate the activity of the nodes); as recognition proceeds, nodes at the candidate object or event level become inactive and the corresponding candidate objects or events are excluded (**Aref:** C5, L23-64; EN: Following the path with the best match); and wherein recognition may then occur when all but one node at the candidate object or event level has become inactive; e.g., all but one object or event has been excluded (**Aref:** C6, L39 to C7, L63; EN: the recitation that an element "may" perform a given function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense).

**Claim 8**

Aref anticipates the hierarchical database contains one or more intermediate levels below the candidate object or event level, an intermediate level representing an object or event in terms of compositional elements (**Aref:** abstract, L3-19; C6, L17 to C7, L15; Figs. 7 and 8a-8d).

**Claim 9**

Aref anticipates compositional elements of a lower level are represented by sub-elements they contain (**Aref**: abstract, L3-19; C6, L17-38; C7, L64 to C8, L15; Fig. 7).

**Claim 10**

Aref anticipates nodes at different levels of the hierarchical data set are connected, in bottom-up fashion, to nodes at a higher level according to a compositional rule whereby lower level nodes representing an element or sub element are connected to nodes at the next higher level if the item represented by that node is composed in part by the element or sub-element (**Aref**: abstract, L3-19; C6, L17 to C7, L15; Figs. 7 and 8a-8d; EN: paragraph 11 applies. Since there is no definition in the specification as to what "bottom-up" means, the Examiner considers that a node in a lower level connected to a node in a higher level is connected in bottom-up fashion).

**Claim 13**

Aref anticipates the SAM operates in conjunction with the FEM to detect feature information for a feature that: a) has a low non-zero measure and is present, or b) has a high measure and is absent, whereby when the feature has low non-zero measure, features having zero measure and objects or events containing said features are excluded from the candidate set allowing compact processing (**Aref**: C5, L23-64; C7, L30-63; EN: paragraph 11 applies. The

Art Unit: 2129

probabilities are measures of the features).

**Claim 14**

Aref anticipates the SAM attends to feature information by applying at least one selection process chosen from among the set of processes consisting of: a) a random selection process; b) a unidirectional selection process; and c) a bidirectional selection process (such as "greatest mismatch" for example is detected to be present but has the lowest non-zero probability of being present; or is determined to be not present, but has the highest probability based on the currently active nodes) (**Aref**: C5, L23-64; EN: paragraph 11 applies. Following the path with the best match between the input sequence and the objects).

**Claim 16**

Aref anticipates a method of identifying a presented object or event by determining a corresponding object or event from among a set of candidate objects or events (**Aref**: abstract), such method comprising the steps of: a) constructing a hierarchical data set wherein the data set includes a level of candidate object or event nodes hierarchically connected with a level of feature nodes (**Aref**: abstract; C1, L61 to C2, L5; C2, L18-41; C3, L28-47; C4, L61 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; EN: paragraph 11 applies. The tree is a hierarchical dataset. The HMM's are considered lower level nodes containing features and are connected to an object node. Having a higher level tree hold the individual phrases (candidate objects) and a tree holding the individual word in the form of their component phonemes (features)) also reads on this claim limitation); b) selectively detecting at least one feature of the



Art Unit: 2129

presented object or event, said feature corresponding to a feature node of the data set (**Aref:** C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. Feature vectors are formed from pen movement. The HMM's will use the feature information (modulate the flow of the features) to select the best match between the input sequence and an object in the database); and c) excluding candidate object or event nodes that are not connected to the feature node corresponding to the selectively detected node so that steps b) and c) reduce the number of candidate objects or events, leading to recognition of the presented object or event (**Aref:** C2, L18-41; C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. The HMM's contained in the nodes will accept a specific object with a high probability relative to other objects. Therefore, depending on the input sequence, a node will recognize an object or will be excluded from the search path depending on how close the object matches the input sequence).

**Claim 17**

Aref anticipates said selective detecting is carried out by attending to one or more features based on a feature measure determined from the set of candidate objects or events (**Aref:** C2, L18-41; C5, L53-64; C6, L17 to C7, L63; C8, L16-42; EN: paragraph 11 applies. Maxima, minima, inflection points and probabilities are feature measures).

**Claim 18**

Aref anticipates the features constitute parts of the candidate objects or events, and the feature measure is defined by counting parts corresponding to

Art Unit: 2129

the set of candidate objects or events and normalizing the counts (**Aref:** C4, L43 to C5, L37; C6, L17-38; **EN:** the frequency distribution is a count. A particular letter to recognize is a candidate object. Minima, maxima and inflection points are parts of the letter (object)).

#### **Claim 19**

Aref anticipates the selective detecting is carried out by selecting a feature that is determined to be: i) absent, but have a high measure; or ii) present but have a low non-zero measure; so that step c) substantially reduces the set of candidate object or event nodes (**Aref:** C5, L23-64; C7, L30-63; **EN:** the probabilities are measures of the features).

#### **Claim 21**

Aref anticipates the hierarchical data set includes nodes intermediate to the feature nodes and the object or event nodes (**Aref:** abstract, L3-19; C6, L17 to C7, L15; Figs. 7 and 8a-8d).

#### **Claim 22**

Aref anticipates a recognition method for identifying a presented stimulus (**Aref:** abstract; **EN:** the sequence of input data is a stimulus), such method comprising the steps of: a) presenting an input stimulus for recognition (**Aref:** abstract; C2, L18-41); b) identifying a set of candidate objects or events (**Aref:** abstract; C2, L18-41), the candidate objects or events possessing features (**Aref:** C4, L43 to C5, L40; C5, L53-64; C6, L17 to C7, L29; C8, L16-42; C11, claim 1; **EN:** the pen strokes will generate feature vectors. Moreover, minima, maxima

Art Unit: 2129

and inflection points are features of the objects), wherein the candidate objects or events and features form an interconnected hierarchy wherein an object or event node at a higher level is linked to feature nodes at a lower level corresponding to the object or event node, and wherein a feature node at the lower level is linked to one or more corresponding object or event nodes (**Aref**: abstract; C1, L61 to C2, L5; C2, L18-41; C3, L28-47; C4, L61 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; EN: paragraph 11 applies. The tree is a hierarchy. The HMM's are considered lower level nodes containing features and are connected to an object node. Having a higher level tree hold the individual phrases (candidate objects) and a tree holding the individual word in the form of their component phonemes (features)) also reads on this claim limitation); c) assigning a measure to features at the lower level, setting a window of attention identifying feature domain information of interest, detecting a feature in the window of attention, wherein said setting a window of attention is performed responsive to said measure so that processing of the detected feature efficiently reduces the candidate set (**Aref**: C2, L18-41; C5, L53-64; C6, L17 to C7, L15; C7, L30-63; 11, claim 1 EN: the path followed is considered a window. The probability is a measure used to select the path); and d) re-defining the set of candidate objects or events consistent with the detection of said feature (**Aref**: C2, L18-41; C5, L53-64; C6, L17 to C7, L15; C7, L30-63; C11, claim 1; EN: selecting the objects having the element (features) having the highest acceptance values).

Art Unit: 2129

**Claim 23**

Aref anticipates the steps c) and d) are repeated to iteratively reduce the candidate set to a single candidate, thereby identifying the presented object or event (**Aref:** abstract; C7, L30-63; C11, claims 1 and 2).

**Claim 24**

Aref anticipates the detection is carried out simultaneously of plural features in plural windows of attention to reduce the candidate set (**Aref:** C2, L18-41; C5, L53-64; C8, L16-60; EN: the combined HMM of the Viterbi algorithm).

**Claim 25**

Aref anticipates the step of selecting a window of attention is performed by selecting a window including a feature having a high measure or a low non-zero measure (**Aref:** abstract; C5, L53-64; C7, L30-63; C11, claim 1; EN: the path followed (window) will depend on the probability value (measure)).

**Claim 26**

Aref anticipates a recognition device comprising a processor, at least one feature detector or input receiving device for receiving a feature detection input (**Aref:** C4, L43-60; Fig. 1), and a hierarchical database having nodes at a lower level corresponding to features hierarchically connected to nodes at a higher level corresponding to candidate objects or events (**Aref:** abstract; C1, L61 to C2, L5; C2, L18-41; C3, L28-47; C4, L61 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; EN: paragraph 11 applies. The tree is a hierarchy. The HMM's are considered lower level nodes containing features and are connected to an object

Art Unit: 2129

node. Having a higher level tree hold the individual phrases (candidate objects) and a tree holding the individual word in the form of their component phonemes (features)) is also considered to read on this limitation), wherein the processor is operative to carry out processing for identifying a presented object or event by determining a corresponding object or event from among a set of candidate objects or events by implementing the following steps (EN: it has been held that the recitation that an element is "adapted to" , or in this case operable to, perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense. *In re Hutchison*, 69 USPQ 138.): a) constructing a hierarchical data set wherein the data set includes a level of candidate object or event nodes hierarchically connected with a level of feature nodes (**Aref:** abstract; C1, L61 to C2, L5; C2, L18-41; C3, L28-47; C4, L61 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; EN: paragraph 11 applies. The tree is a hierarchical dataset. The HMM's are considered lower level nodes containing features and are connected to an object node. Having a higher level tree hold the individual phrases (candidate objects) and a tree holding the individual word in the form of their component phonemes (features)) also reads on this claim limitation); b) selectively detecting at least one feature of the presented object or event, said feature corresponding to a feature node of the data set (**Aref:** C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. Feature vectors are formed from pen movement. The HMM's will use the feature information (modulate the flow of the features) to select the best match between the input sequence and an object in

Art Unit: 2129

the database); and c) excluding candidate object or event nodes that are not connected to the feature node corresponding to the selectively detected node so that steps b) and c) reduce the number of candidate objects or events, leading to recognition of the presented object or event (**Aref:** C2, L18-41; C4, L43 to C5, L40; C5, L53-64, C6, L17 to C7, L29; C8, L16-42; C11, claim 1; EN: paragraph 11 applies. The HMM's contained in the nodes will accept a specific object with a high probability relative to other objects. Therefore, depending on the input sequence, a node will recognize an object or will be excluded from the search path depending on how close the object matches the input sequence).

**Claim 27**

Aref anticipates the candidate objects or events are objects or events selected from one of the groups of objects or events including physical objects or events, abstract objects or events and abstract representations of physical objects or events (**Aref:** abstract; C3, L28-47).

**Claim 28**

Aref anticipates nodes having zero measure are excluded from an active data set thereby enhancing operation by processing a smaller data set (**Aref:** abstract; C5, L53-64; C7, L30-63; C11, claim 1; EN: paragraph 11 applies. Selecting the nodes having the highest probabilities or acceptance values).

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2129

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aref as set forth above in view of Agarwal et al. (US Patent #6,389,416; referred to as **Agarwal**).

**Claim 11**

Aref does not teach bottom-up signal processing is arranged such that detection of a feature causes a corresponding feature node of the data set to excite the nodes of the data set connected to said corresponding feature node, and candidate object or event nodes that do not receive excitation become inactive for the remainder of the recognition process whereby nodes representing candidate objects or events that do not contain detected features are progressively excluded during the recognition process.

Agarwal teaches bottom-up signal processing is arranged such that detection of a feature causes a corresponding feature node of the data set to excite the nodes of the data set connected to said corresponding feature node, and candidate object or event nodes that do not receive excitation become inactive for the remainder of the recognition process whereby nodes representing candidate objects or events that do not contain detected features are progressively excluded during the recognition process (**Agarwal**: abstract: C2, L9-23; C4, L5-32; C11, claim 1).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Aref by incorporating bottom-up signal processing is arranged such that detection of a feature causes a corresponding feature node of the data set to excite the nodes of the data set connected to said corresponding feature node, and candidate object or event nodes that do not receive excitation become inactive for the remainder of the recognition process whereby nodes representing candidate objects or events that do not contain detected features are progressively excluded during the recognition process as taught by for the purpose of saving computing time by terminating processing of a node that does not satisfy a condition needed in order to recognize the input sequence (Aref: C5, L65 to C6, L5; C8, L16-61; C10, L51-63).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aref as set forth above in view of Billet et al. (US Patent Application Publication #2002/0194148; referred to as **Billet**).



Art Unit: 2129

**Claim 20**

Aref does not teach the candidate objects are chemical or biological formulae.

Billet teaches the candidate objects are chemical or biological formulae.  
(Billet: page 1, paragraph 1; page 4, paragraphs 40-42).

It would have been obvious to one of ordinary skill in the arts at the time of the applicant's invention to modify the teachings of Aref by incorporating the candidate objects are chemical or biological formulae as taught by Billet for the purpose of identifying objects related to a specific field.

**Examination Considerations**

8. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. In re Morris, 127 F.3d 1048, 105455, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. In re Prater, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

9. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of

Art Unit: 2129

such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

10. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

11. Examiner's Opinion: paragraphs 8-10 apply. The claims and only the claims form the metes and bounds of the invention. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

#### **Conclusion**

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Barbará et al US Patent #5,649,023

Beernink et al US Patent #5,680,480

13. Claims 1-28 are rejected.

#### **Correspondence Information**

14. Any inquires concerning this communication or earlier communications from the examiner should be directed to Omar F. Fernández Rivas, who may be

Art Unit: 2129

reached Monday through Friday, between 8:00 a.m. and 5:00 p.m. EST. or via telephone at (571) 272-2589 or email [omar.fernandezrivas@uspto.gov](mailto:omar.fernandezrivas@uspto.gov).


If you need to send an Official facsimile transmission, please send it to (571) 273-8300.

If attempts to reach the examiner are unsuccessful the Examiner's Supervisor, David Vincent, may be reached at (571) 272-3080.

Hand-delivered responses should be delivered to the Receptionist @ (Customer Service Window Randolph Building 401 Dulany Street Alexandria, VA 22313), located on the first floor of the south side of the Randolph Building.

Omar F. Fernández Rivas  
Patent Examiner  
Artificial Intelligence Art Unit 2129  
United States Department of Commerce  
Patent & Trademark Office

Thursday, June 07, 2007

  
DAVID VINCENT  
SUPERVISORY PATENT EXAMINER

OFF